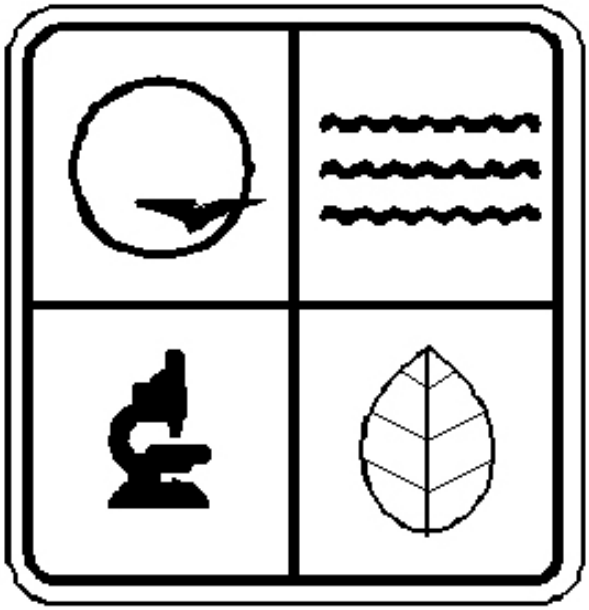
Taylor Baseline

EDM Calibration Baseline
Lewis County, Missouri



Established by
Land Survey Program
Missouri Department of Natural Resources
And
Missouri Department of Highway & Transportation

1994

TAYLOR EDM CALIBRATION BASELINE

The EDM baseline is located just north of Taylor, Missouri, on the west right-of-way of the southbound lane of U.S. 61. The south end of the baseline is located approximately 890 ft. north of the Lewis/Marion County Line and the north end is located approximately 175 ft. south of Route V.

To reach the baseline from the junction of U.S. 61 and Route V in Lewis County, go south on U.S. 61 for 0.8 miles and park on the west shoulder of the road.

The baseline consists of four monuments. The monuments are 16 inch by 48 inch poured in place concrete with center-punched 1 inch by 24-inch copperwelds set in the center. The monuments are flush with the grounds surface and are stamped to identify the stations. The zero meter mark is 23.0 ft. west of the west edge of pavement of the southbound lane of Route 61 and 890 ft. north of the Lewis/Marion County Line; the 150 meter mark is 23.1 ft. west of the west edge of the pavement; the 600 meter mark is 23.1 ft. west of the west edge of the pavement; and the 1300 meter mark is 23 ft. west of the west edge of the pavement and 175 ft. south of the center line of Missouri Route V.

The baseline was monumented by the Survey Department of the Missouri State Highway Department District #3 in Hannibal, MO and calibrated by the Missouri Department of Natural Resources, Land Survey Program.

The baseline station elevation are as follows:
0 meter - 147.298m
150 meter - 147.210m
600 meter - 147.173m
1300 meter - 147.075m
Elevation are referenced to NGVD 1929

Electronic Distance Measuring (EDM) Calibration Baselines in Missouri

The Missouri Department of Natural Resources has established 12 Electronic Distance Measuring (EDM) calibration baselines in Missouri. Despite the fact that modern equipment is highly sophisticated and provides a direct readout of the distance to the nearest hundredth of a foot or millimeter at push of a button, it can also give an erroneous reading. The EDM baseline will allow the operator to verify that the instrument is in calibration and the instrument is being operated properly.

Each EDM baseline consist of 4 monumented stations. The monuments are spaced nominally at 0 meters, 150 meters, 400 meters and 1100 to 1375 meters. Each station will be occupied with the EDM equipment and a measurement made to the 3 other stations. This will give a total of 12 measurements. The results will determine the scale factor and a system constant for the EDM instrument.

The EDM operator should use the same procedures as in every day fieldwork. This will not only confirm that the equipment is in good working order, but will ensure the complete method of collecting data. The measuring system includes not only the instrument but the tripods, tribrachs, prisms, thermometers and barometers/altimeters as well.

WHEN TO CALIBRATE YOUR INSTRUMENT?

- Upon receipt of a new instrument
- Immediately after each servicing
- Anytime the operator feels the instrument is not working properly
- Before and after DNR or other government agency contracts

BEFORE RUNNING THE BASELINE PERFORM THE FOLLOWING

- Check and adjust optical plummets, bulls-eye bubbles and plumbing poles.
- Check thermometers and barometers/altimeters
- Make sure all tripods are rigid and stable
- Clean prisms
- Fully charge all batteries
- Have an EDM Calibration Report form for the baseline you are running.

When filling out the EDM Calibration Report form, fill in all lines that apply and add addition information if needed.

IMPORTANT NOTE

Before each measurement, enter the temperature and station pressure or absolute pressure into the instrument. The barometric pressure given over the radio and at airports has been reduced to sea level. DO NOT ENTER SEA LEVEL PRESSURE INTO THE EDM. One method used to find station pressure or absolute pressure is by elevation. The barometric pressure is reduced 0.1 inches of mercury for every 90 feet of elevation. So, to correct the sea level pressure obtained from the radio or airport, pick an average elevation for your area and divide by 90. Example: if the elevation is 1000 feet, dividing 1000 by 90 equals 11.11. Therefore, subtract 1.11 inches from the sea level pressure to obtain station pressure or absolute pressure.

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY AND RESOURCE ASSESSMENT DIVISION

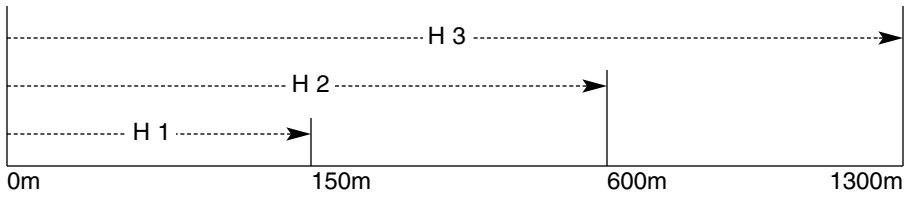
EDM CALIBRATION REPORT – TAYLOR EDM BASELINE (HORIZONTAL)

DATE	COMPANY	REFLECTOR SETUP
		☐ Tripod with tribrach ☐ Prism pole ☐ Bipod pole

INSTRUMENT TYPE AND MODEL

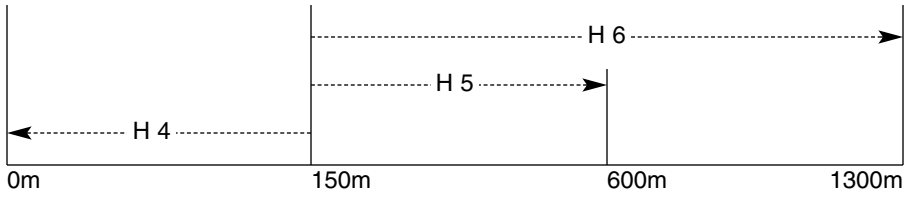
NOTE: ALL DISTANCES SUBMITTED SHALL BE HORIZONTAL.

E.D.M. AT 0m



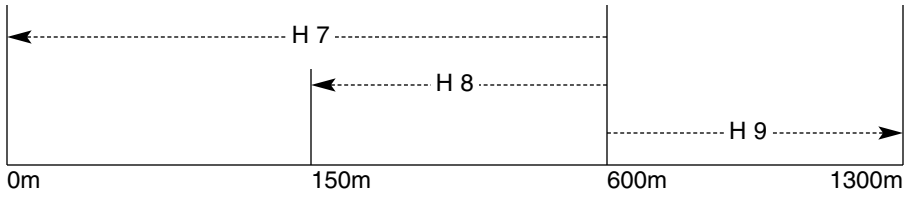
H 1 =	H 2 =	H 3 =	TEMP
H 1 = (149.9992m)	H 2 = (599.9992m)	H 3 = (1300.0081m)	*PRESS

E.D.M. AT 150m



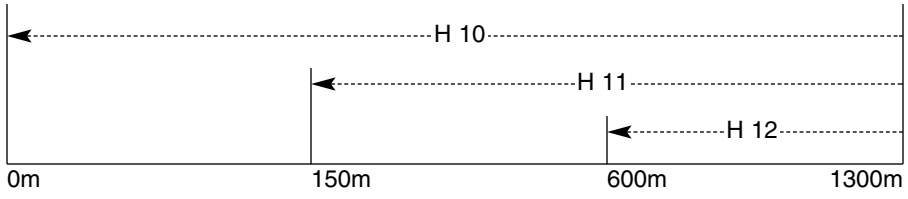
H 4 =	H 5 =	H 6 =	TEMP
H 4 = (149.9992m)	H 5 = (450.0000m)	H 6 = (1150.0089m)	*PRESS

E.D.M. AT 600m



H 7 =	H 8 =	H 9 =	TEMP
H 7 = (599.9992m)	H 8 = (450.0000m)	H 9 = (700.0088m)	*PRESS

E.D.M. AT 1300m



H 10 =	H 11 =	H 12 =	TEMP
H 10 = (1300.0081m)	H 11 = (1150.0089m)	H 12 = (700.0088m)	*PRESS

*Barometric pressure for EDM calibration **must be station pressure**. Do not use barometric pressure reduced to sea level.

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY AND RESOURCE ASSESSMENT DIVISION

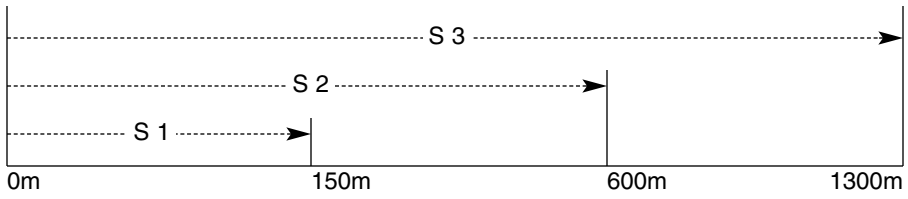
EDM CALIBRATION REPORT – TAYLOR EDM BASELINE (SLOPE)

DATE	COMPANY	REFLECTOR SETUP
		☐ Tripod with tribrach ☐ Prism pole ☐ Bipod pole

INSTRUMENT TYPE AND MODEL

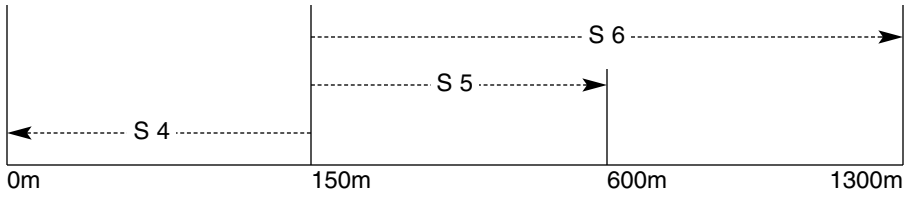
NOTE: ALL DISTANCES SUBMITTED SHALL BE SLOPE.

E.D.M. AT 0m



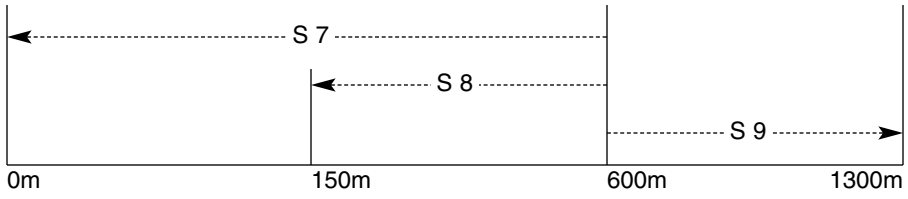
HI =	S 1 =	S 2 =	S 3 =	TEMP
	H 0 =	H 0 =	H 0 =	*PRESS

E.D.M. AT 150m



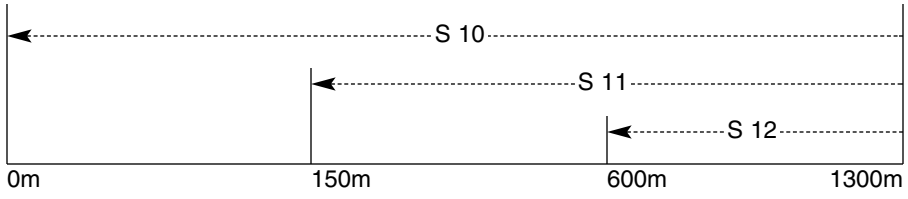
S 4 =	HI =	S 5 =	S 6 =	TEMP
H 0 =		H 0 =	H 0 =	*PRESS

E.D.M. AT 600m



S 7 =	S 8 =	HI =	S 9 =	TEMP
H 0 =	H 0 =		H 0 =	*PRESS

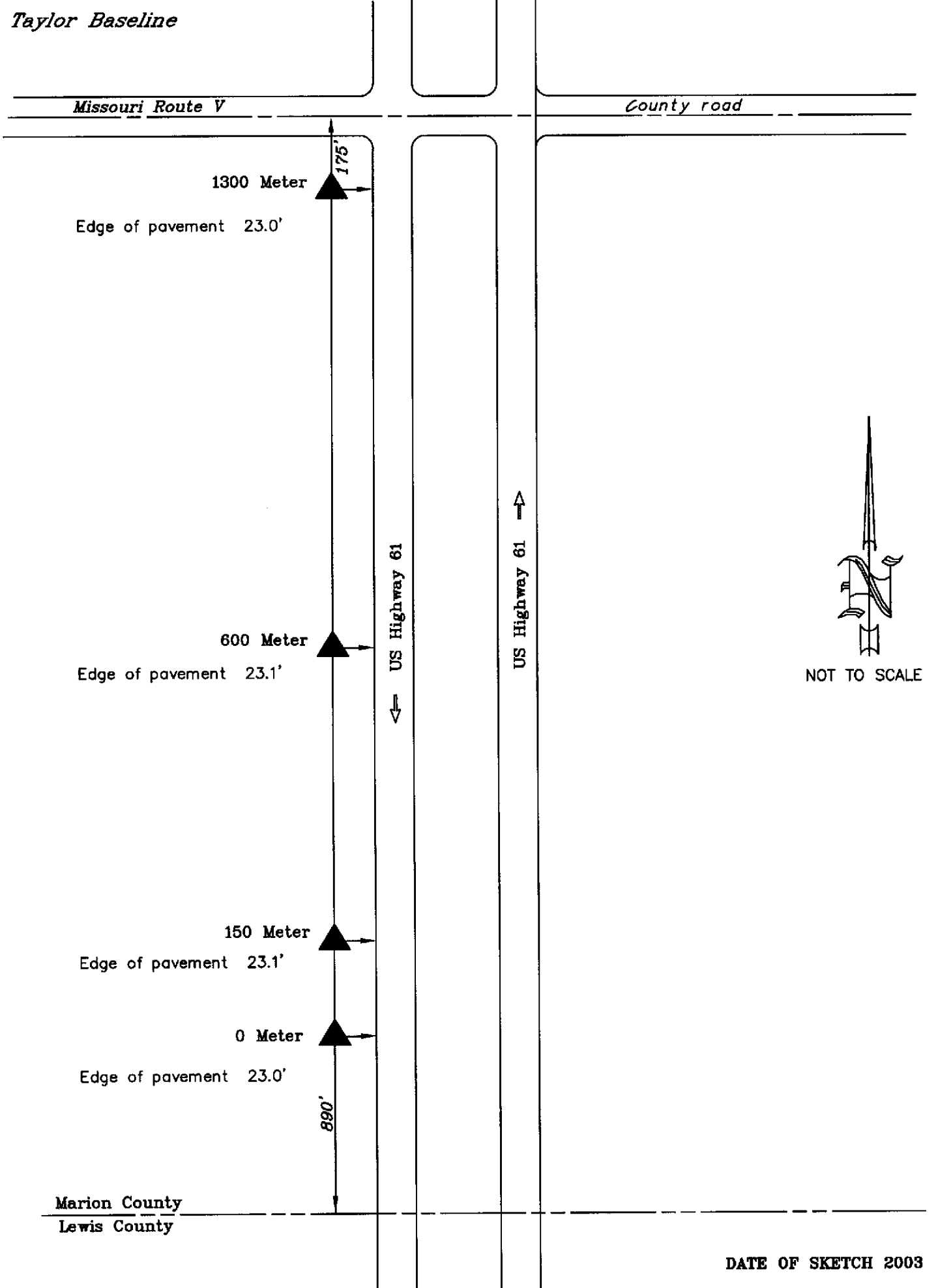
E.D.M. AT 1300m



S 10 =	S 11 =	S 12 =	HI =	TEMP
H 0 =	H 0 =	H 0 =		*PRESS

Heights or delta elevations between monuments. Elevations (Referenced to NGVD 1929)
0m = 147.298m 150m = 147.210m 600m = 147.173m 1300m = 147.075m

*Barometric pressure for EDM calibration **must be station pressure**. Do not use barometric pressure reduced to sea level.


Taylor Baseline
Missouri Route V
County road
175'
1300 Meter
Edge of pavement 23.0'
US Highway 61
US Highway 61
600 Meter
Edge of pavement 23.1'
NOT TO SCALE
150 Meter
Edge of pavement 23.1'
0 Meter
Edge of pavement 23.0'
890'
Marion County
Lewis County
DATE OF SKETCH 2003